WATER CONTAMINATION BY POLYCHLORINATED BIPHENYLS IN ARMENIA

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Background and Aims: To reveal the state of environmental pollution by such Persistent Organic Pollutants as Polychlorinated Biphenyls (PCBs) in the surface water basins of the Republic of Armenia the following categories of water basins were selected:
1. Rivers Hrazdan, Vorotan, at which there are hydroelectric power plants
2. Rivers Debet and Voghchi, at which there are industrial enterprises;
3. Lake Sevan and Arpa river, at which no industrial enterprises or hydroelectric power plants are functioning.
Methods: Samples of water were analyzed by means of gas-liquid chromatography.
Results: Determination of PCBs in samples taken from water reservoirs of the 3rd category demonstrated that PCBs were detected in the range of 0.07-0.93mkg/l.
In Sevan – Hrazdan ecosystem the highest level of determination in bottom sediment made 1.193 mcg/kg, in periphyton the residues reached 1.505 mcg/g. In macrophytes PCBs content amounted to 2.119 mcg/g, while in the organism of craw-fish – 1.347 mcg/g.
In samples of water taken from rivers belonging to the 1st category the content of PCBs was 2-fold higher than in water samples from reservoirs of the 3rd category. In these samples PCB residues ranged from 0.44 mcg/l to 2.93 mcg/l.
Conclusions: Study of water samples taken from the rivers, in the water collection area of which there are enterprises having potential to contaminate the environment by PCBs (category 2), revealed that from the point of view of PCB-induced contamination these samples were in an intermediate state. Residues of PCBs made from 0.44 to 1.68 mcg/l. Average PCB content in these samples was 0.68-1.33 mcg/l.
Open water basins studied for PCBs were contaminated by these substances, signifying that the environment of Armenia is contaminated by PCBs and power engineering system is the main source of PCB-related contamination in Armenia.